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GRAZING ASSESSMENT

CYPRESS HILLS PROVINCIAL PARK · ALBERTA

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THE GRAZING ISSUE

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THE GRAZING ISSUE

Conflict with Recreation

The situation of cattle grazing in Cypress Hills Provincial Park is cognizable from several points of view:

1) the alleged competition with ungulates, discussed under Wildlife,

2) the conflict with the conservation image of the Park, discussed under History,

3) the overgrazing of the grassland, discussed under Vegetation,

4) the conflict with current Park's policy directives, discussed under Park's Policy, and

5) the economic implications of scaling down or removing grazing from the Park, discussed herein.

None of these discussions, however, deals directly with the issue of cattle vs. people, that is, with the depreciation of the quality of the recreation experience and recreation sites by cattle. This, too, should be part of the background awareness affecting any decision relative to grazing. Accordingly, the major incidents of the people vs. cattle issue are characterized below; Photos 1 to 4 document typical incidents.

Cattle vs. People

Depreciation of the quality of the recreation experience and recreation sites by cattle
- Cattle occupying potential recreation sites.
- Cattle trampling and damaging potential recreation sites.
- Cattle creating muddy conditions along trails.
- Cattle depreciating water quality of springs and streams.
- Cattle aggravating slope instability on hillsides.
- Cattle increasing bank instability and erosion/siltation along streams.
- Cattle/people encounters on roadways and trails.
- Cattle gates and guards across roads.
- Cattle fences along roads.
- Cattle noise.
- Cattle relegating people to recreation "compounds".
- Cattle alien to anticipated "park" experience.
- Cattle disturbing important natural/interpretive areas.

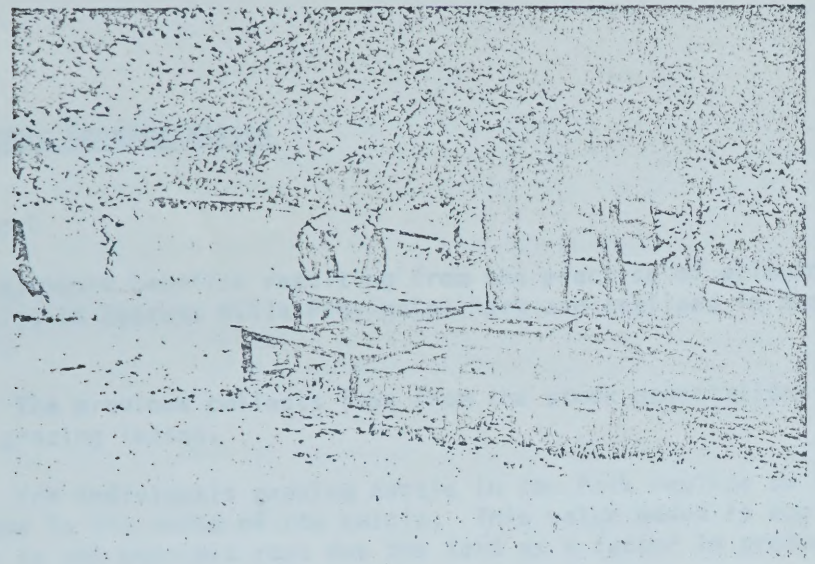

Photo 1. Cattle occupying potential recreation site, Battle Creek Campground.

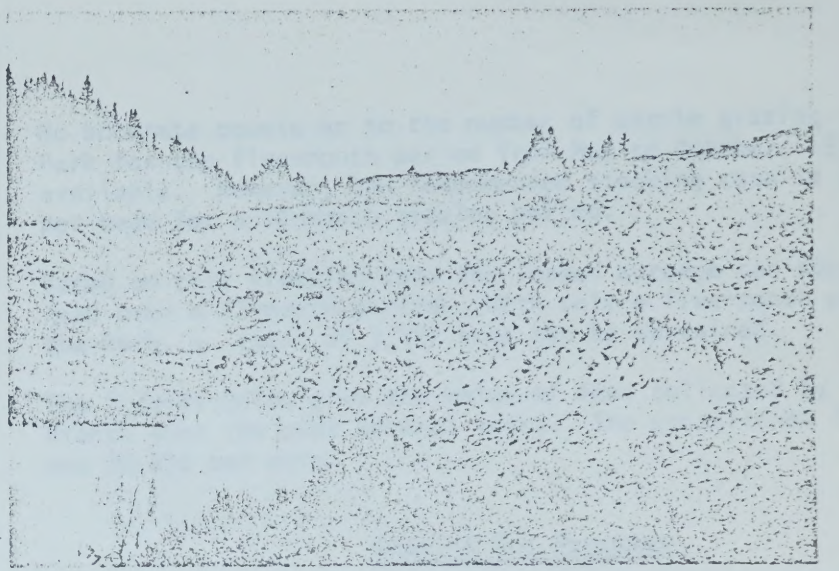

Photo 2. Cattle increasing bank instability and erosion/ siltation along streams, lower Battle Creek.

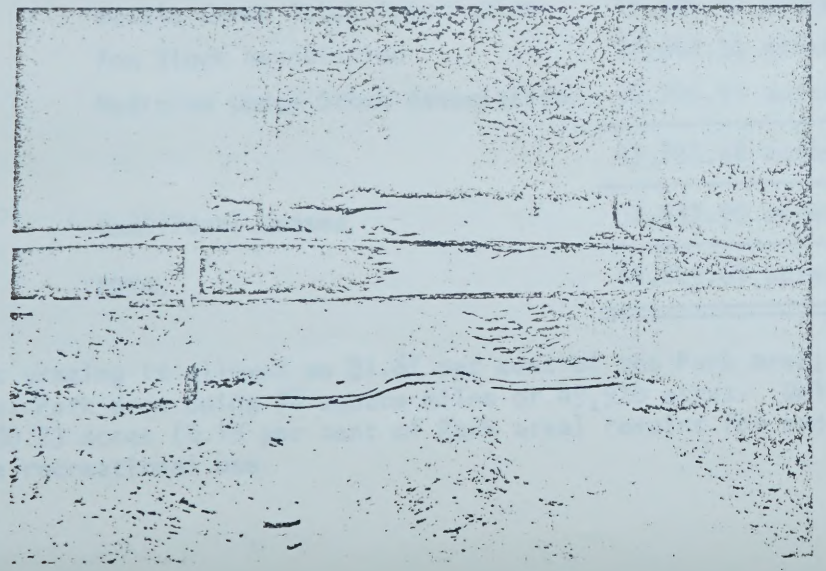

Photo 3. Cattle relegating people to recreation "com-

Photo 4. Cattle disturbing important natural/interpretive

Economic Considerations

General

The economic benefits resulting from the practise of allowing grazing in Cypress Hills Provincial Park are realized in two ways:

1) The province collects fees from the stock associations for the grazing leases.

2) The individuals grazing cattle in the Park realize an increase in the value of the cattle. This value added is equivalent to the economic rent due the land as a factor in production.

Total acreage of leased grazing land in the Park amounts to 45,829.67 acres. It is distributed as follows:

Battle Creek Stock Association	15,486.42 acres
Fox Stock Association	11,662.32 acres
Medicine Lodge Stock Association	16,746.94 acres
	43,895.68 acres
Individual Leases	1,933.99 acres
TOTAL	45,829.67 acres

Thus grazing is allowed on 91.81 per cent of the Park area; total Park area being 78 square miles or 49,920 acres. Only 4,090.33 acres (8.19 per cent of Park area) remains for exclusive recreational use.

No accurate counts as to the number of cattle grazing in the Park for the five-month period from May to October, 1973, are available. However, the recommended stocking rate is 32 acres per head for a 12-month grazing period.

Based on this stocking rate the leased acreage can support 1,432 head over a 12-month period. With only a five-month period in the Park, a total of 3,437 head can be sustained.

The figures below give the value of fees collected by the Parks Branch over the past several years. The established fee in 1973 was 20.25¢ per acre.

Grazing Fee Revenues

1969	$17,119.35
1970	4,833.05
1971	4,887.83
1972	5,486.84
1973	8,894.88

Based on the carrying capacity and the lease fee of 20.25¢ per acre the cost of one aum (animal unit month) of grazing is 54¢. By comparison, the average rates for leasing private land in this area is $4.15 per aum ($3.30 per acre). The rates for grazing leases for Crown land are set as percentages of the forage value of an acre head. In 1973 on lands with a carrying capacity of 32 acres per head the rental charge was 16.875¢ per acre head. The cost of one aum of grazing being 45¢.

The resultant value of the cattle grazing in the Park can be calculated. It is assumed that each animal has a weight gain of 250 pounds during the five-month grazing period in the Park.

The price used in calculating the approximate value of the cattle is 48.74¢ per pound. This is an average of the price of cattle in Calgary for the two months of July and August, 1973. The prices used were those quoted in the "Canada Livestock and Meat Trade Report" of the Markets Information Section, Canada Department of Agriculture.

The July average as reported in Volume 54, Number 31 was:

Steers A1, A2	$46.82/cwt
Heifers A1, A2	43.78/cwt

The August average as reported in Volume 54, Number 37 was:

Steers A1, A2	$53.47/cwt
Heifers A1, A2	50.88/cwt

From these figures the unweighted average of the price for slaughter cattle over the two months was calculated as $48.74/cwt or 48.74¢ per pound.

Recent prices for cattle have not been stable but have fluctuated widely, especially in August when they varied from $48.00 to $57.00. Prices have been affected by rising feed costs, export controls, and American cattle and meat industry policies in recent months, especially the price freeze. For these above reasons a two month average was taken to more accurately represent a reasonable price.

The value of the cattle grazing in the Park is calculated as follows:

Number of Cattle	3,437 head
Weight Gain per Animal	250 pounds
Total Weight Gain	859,250 pounds
Value per Pound of Gain	48.74 cents
Total Value of Weight Gain	$418,798.45

The value of the weight gain per individual animal is 250 pounds x 48.74¢ per pound = $121.85 per year ($24.37 per month for a five-month period).

The value of the grazing fees collected by the province is included in the $419,000 annual value of grazing in the Park. The remainder of this accrues to the ranchers as income.

Resolution of Recreation/Grazing Conflict

Alternative 1. (Removal)

As indicated previously there is a significant conflict between cattle and recreational use in the Park. In order to resolve this conflict one possible solution is to completely remove grazing from the Park. There are various approaches for doing this. However, it should first be mentioned that this action will result in the direct loss of economic activity exceeding $400,000 annually.

The three approaches are as follows:

1) Through legislative (or administrative) fiat it is possible to decree that there will be no more grazing in Cypress Hills Provincial Park. Such action will cost the people of the area over $400,000 annually.

This is equivalent to $4,000,000 in lost benefits taken at present value with a discount rate of 10 per cent. This is only the average cost, and since some ranchers depend on their leases in the Park to have an economically viable unit the marginal cost is greater. That is, some ranches will no longer be of sufficient size to be economic units if the land is removed from their use. Thus some operations may cease, further increasing the cost of removing Park land from grazing. (It is possible that some ranchers could purchase land from ranchers ceasing their operations established; but they may require assistance in the form of subsidies or low cost loans, thereby incurring additional cost.)

2) Another means of taking the land out of grazing use is through negotiation with the ranchers. As stated above, the cost to the ranchers and the total loss to the provincial economy exceeds $400,000 annually, with the capitalized cost (to perpetuity) being $4,000,000, and with the high probability that the actual (marginal) cost to the ranchers will be greater than this. However, the people could be compensated for the loss of this resource. Therefore, it seems prudent to assume that the settlement will be in the area of 1.5 to 2.0 times the average cost.

Accordingly, the actual figure for the cost of removing grazing by this method would be from $6,000,000 to $8,000,000.

3) The ranchers of the area have no legal right to the continued use of this grazing land. However, this right probably exists in the minds of the community. They have traditionally used this land and expect to continue to use it. In order to acknowledge the prevalence of this way of thinking by the ranchers, the Government of Alberta can give them this right to use the land by Order in Council or through legislation and can then expropriate this right from them with due compensation. In Court of Expropriation, settlement costs to the province in the order of magnitude of 1.5 to 2.5 times the present value of the resource could be expected. Thus, the cost would be from $6,000,000 to $10,000,000.

Alternative 2. (Reduction)

Rather than removing grazing completely it is possible that grazing continue to be allowed in the Park. However, certain criteria should be met.

First stocking rates should be reduced to conform to the estimated carrying capacity of the land. Secondly, grazing should be confined to the plateau grassland section of the Park.

1) True Carrying Capacity for Park.

Land in the Cypress Hills can be divided into Plateau Grassland, Sloping Grassland, Poplar Woodland, Coniferous Forest, and Lowland. Acreages and grazing capability for each area have been estimated as follows:[1]

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1. Turnbull and Wroe, Memorandum, 1970.

Range Type	Area (Acres)	Stocking Rate Aum/Acre	Total Aum
Plateau Grassland	16,145	0.6	9,687
Sloping Grassland	4,400	0.5	2,200
Poplar Woodland	7,190	0.3	2,157
Coniferous Forest	20,555	0	0
Lowland	600	0.5	300
TOTAL	48,890		14,344

These figures indicate a total carrying capacity under good management conditions, of 14,344 aum. Until now, stock associations have been stocking cattle at the rate of 32 acres/head/year. This is a stocking rate of 0.37 aum per acre for a total of 17,186 aum over 45,829.67 leased acres. At present, then, the Park is being overgrazed by 2,842 aum, or 19 per cent of the estimated carrying capacity. Grazing in the Park should be reduced by that amount regardless of what other measures are taken. Reduction of grazing to the recommended present carrying capacity represents a reduction in grazing value of $69,260 annually for a present value of $692,600.

2) Grazing Reduction Based on Ecological Considerations.

Grazing should be removed from sloping grassland, poplar woodland, coniferous forest, and lowland, these being prime ecological support areas for the Park. The losses resulting from these measures are as follows:

Sloping Grassland	2,200
Poplar Woodland	2,157
Coniferous Forest	0
Lowland	300
TOTAL	4,657 aum

This reduction would also require development of water supplies for the plateau. It is estimated (Canada Department of Agriculture, 1952) that cattle should not have to walk more than 1.5 miles for water. Water development would thus require approximately 10 watering areas. Other requirements include the establishment of counting in/out procedures, and detachment of a government rider.

Costs of these measures are as follows:

Item	Unit $	Annual Cost	Present Value
Loss of 4,657 aum	@$24.37/aum	$113,491/yr.	$1,134,910
Establishment of 10 dugouts	@$1,000	10,000	10,000
Counting in/out 4 man-months	@$500/mo.	2,000/yr.	20,000
Government rider 6 man-months	@$500/mo.	3,000/yr.	30,000
TOTAL		$138,491	$1,194,910

These costs represent a capital cost of $10,000 for dugouts and ongoing costs of $113,491 per year. Present value of these costs is $1,194,910 discounted to perpetuity at a discount rate of 10 per cent.

3) Grazing Reduction Based on Recreational Considerations

Further costs would be incurred if the grazing area were reduced to 12 sections with carrying capacity raised to one aum per acre by brush spraying. The requirements are as follows:

Reduction from 9,687 aum to 7,680 aum.
Annual spraying of grassland for five years for range improvement.

The costs of these measures are:

Loss of 2,007 aum @ $24.37 per aum	$48,810 per year (for a present value of $489,100)
Spraying costs $23,000 per year for five years	$115,000

With the addition of spraying costs the present value of these measures is about $604,100.

Summary of Reduced Grazing Alternative

In summary, Alternative 2 outlines three levels of reduced grazing within the Park boundaries: reducing grazing to be recommended carrying capacity, reducing grazing further based on ecological considerations, and further reduction based on recreation considerations. Table 1 outlines the amount of reduction in animal unit months, the annual loss of grazing value, including certain management costs as previously outlined, and the present values.

Table 1

Grazing Reduction Schedule

	Reduced AUM	Cumulative AUM	% Reduction from Present No. of AUM	Annual Marginal Loss	Cumulative Present Value
Grazing reduction to recommend park carrying capacity	2842	2842	16.5	$ 69,260	$ 692,600
Grazing reduction based on ecological considerations	4657	7499	43.6	138,491	1,887,510
Grazing reduction based on recreation considerations	2007	9506	55.3	71,910	2,491,610

The present value of reducing grazing to the maximum level, including range management costs is estimated to approximate $2.5 million. Given that a Court of Expropriation might award a settlement in the order of magnitude of 1.5 to 2.5 times the present value of the resource, the total cost might be up to $6.25 million.

Conceptual Plan

The Conceptual Plan developed for the Cypress Hills Provincial Park utilizes Alternative 2. It is felt that by (1) removing grazing from the prime ecological and recreational areas, and (2) putting grazing into a context compatible with a park experience (Era Concept) that an optimum balance is struck between the essentials necessary for the Cypress Hills Provincial Park to realize its full potential and the legitimate demands of prudent resource development.

Phasing

To bring grazing into the context recommended is the Conceptual Plan, the following five-year phasing program is recommended:

Year	Adjustment
1	Adjust grazing in the Park to the true carrying capacity (14,344 aum)
2	Reduce grazing in the Park to about 12,678 aum
3	Reduce grazing in the Park to about 11,012 aum
4	Reduce grazing in the Park to about 9,346 aum. Construct fences around grazing area specified in Conceptual Plan; construct dugouts for watering. Grazing Association arrangement.
5	Reduce grazing to about 7,680 aum (55 per cent of total Park capacity); restrict grazing to area specified in Conceptual Plan. Remove old fences.

Recreation Benefits

Although the present value of losses resulting from the proposed reduction in grazing and cost of range improvement appear substantial, the improved quality of recreation and the possible expansion of recreation quantity in the Park replace direct financial losses experienced from reduced grazing.

Detailed review of expenditure patterns of Park visitors indicates a daily expenditure ranging from $8.00 to $12.00 per capita. Assuming an average expenditure of $10.00 per capita, the addition of 62,500 visitor days annually to the Park would replace the loss from grazing. This would represent an increase of 10 per cent over recent annual visitor days to the Park. Given that park visitation rates in recent years have increased by as much as seven per cent (although variations in park attendance between parks exist, the general trend has been upwards), and given an improved grazing would be made up within a short period of time.

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